

aerial imagery were used to identify types and delineate clusters of vegetation. LCTA data was used to verify vegetation types on the ground. Finally, extensive ground truthing was completed in areas not covered by LCTA data. With the exception of detailed evaluations of ERF in 1993-1994 (Racine et al. 1993; CH2M Hill 1994b) and a general forest cover type survey conducted in 1955 (Quirk 1990), no other maps illustrating vegetation cover on Fort Richardson have been produced. The vegetation map was completed in 1998 (Figure 2-7).

### 2.3.2.5 Wetland

On Fort Richardson, there are freshwater and salt-water marshes, bogs, lakes and lake margins, and riparian areas. These wetlands may or may not qualify as jurisdictional wetlands (i.e. as defined in Section 404 of the Clean Water Act). Jurisdictional wetlands are determined by the Corps of Engineers on the basis of hydric soils, aquatic vegetation, and hydrology.

The post has estuarine, palustrine, riverine, marine, and lacustrine wetlands. Within ERF Impact Area, there are 2,165 acres of wetlands. Wetlands on Fort Richardson are shown in Figure 2-8.

National Wetlands Inventory (NWI) mapping was completed for the post using 1978 aerial photographs. The NWI maps, however, were determined to be inadequate for meeting the present needs of Fort Richardson. As a result, in the summer of 1995, the Waterways Experiment Station (WES) completed an intensive field survey to revise the NWI maps of the post (Lichvar and Specher, 1996). These revised wetland maps provide greater accuracy in delineation of wetlands on Fort Richardson and are also useful to the Alaska District, Corps of Engineers for jurisdictional wetland determination.

WES is classifying wetlands on Fort Richardson based on values, functions and size. Classification was used to develop a wetlands management action plan.

### 2.3.2.6 Forest Resources

In 1955, a mapping of forest types was completed that still serves as the primary indicator of forest composition (Henley et al. 1955). Forest types are



*White Spruce Type.*

comprised of stands with similar composition and development. The eight forest types on the post are listed below.

- **White Spruce Type:** This type is distinguished by the occurrence of at least 70 percent white spruce. Pure stands of white spruce represent the “climax” or mature stage of forests at Fort Richardson on suitable sites. White Spruce Type is found on relatively dry, level, and well-drained soils. Spruces associated with this type usually occur as even-aged, old growth trees.
- **Paper Birch Type:** This common type is characterized by a predominance of paper birch. Birch is often the primary tree species to invade disturbed sites and therefore represents a transitional stage in the development of white spruce forests. Stands are typically even-aged and occur on well-drained, level to sloping sites where there has been ground disturbance.
- **Quaking Aspen Type:** This type is characterized by pure, even-aged stands of quaking



*Paper Birch Type.*



Mixed Spruce-Hardwood Type.

aspen. The stands occur on warm, dry, south-facing slopes. This type is uncommon on Fort Richardson.

- **Cottonwood and Balsam Poplar Type:** This type is characterized by a predominance of black cottonwood and/or balsam poplar. It occurs on poorly-drained soils in floodplains along streams and certain upland areas. It may occur as an early stage in development of white spruce forests.
- **Black Spruce Type:** Stands of this type usually consist of only black spruce. They occur on cold, poorly-drained soils with little productive potential. On Fort Richardson, they are commonly adjacent to bogs.
- **Mixed Spruce-Hardwood Type:** This is the most common forest type on the post, characterized by mixed stands of white spruce, paper



Brush Type.

birch, quaking aspen, and balsam poplar. It occurs on well-drained, level to sloping sites.

- **Brush Type:** This type is characteristic of non-forest ecosystems, such as shrub thickets and sub-alpine areas. It is dominated by stunted and/or sapling willows (*Salix* spp.), alders (*Alnus crispa*, *A. sinuata*, *A. tenuifolia*), and paper birch.

There are no significant markets for forest products found on the post at this time. On neighboring Elmendorf AFB, 47 percent of the timber stands are over 175 years old, 30 percent are 50-100 years old (due to fires in the first third of this century), and 23 percent are less than 50 years old (due primarily to military-related losses). No stands are between 100 and 175 years old (Elmendorf AFB 1994). Much of the older age timber is in “an advanced state of decline” (Elmendorf AFB 1994), and there is obvious damage from spruce bark beetles (*Dendroctonus rufipennis* [Kirby]) in older stands on Fort Richardson. It would take very intensive timber stand improvement and a considerable amount of time for regrowth to create a significant commercial forest on the post. There is little justification for this course of action at present.

### 2.3.3 Fauna

*“What is man without the beasts?*

*If all the beasts were gone, man would die from a great loneliness of spirit. For whatever happens to the beasts soon happens to man.”*<sup>10</sup>

Due to diverse ecosystems and a relatively unobtrusive military mission, most species indigenous to south-central Alaska can be found on Fort Richardson. Two important wildlife components on the post are a highly productive moose population that has responded well to adequate habitat and specialized management practices, and a concentration of waterfowl attracted to the tidewater salt marsh. A list of verified species is provided in Appendix F. Wildlife habitat is shown in Figure 2-9.

#### 2.3.3.1 Mammals

**Moose:** Moose (*Alces alces*) is a key species for wildlife management on Fort Richardson. They are the largest, most abundant, and most sought-after

<sup>10</sup> Chief Seattle 1854.



Figure 2-8. Fort Richardson Wetlands.

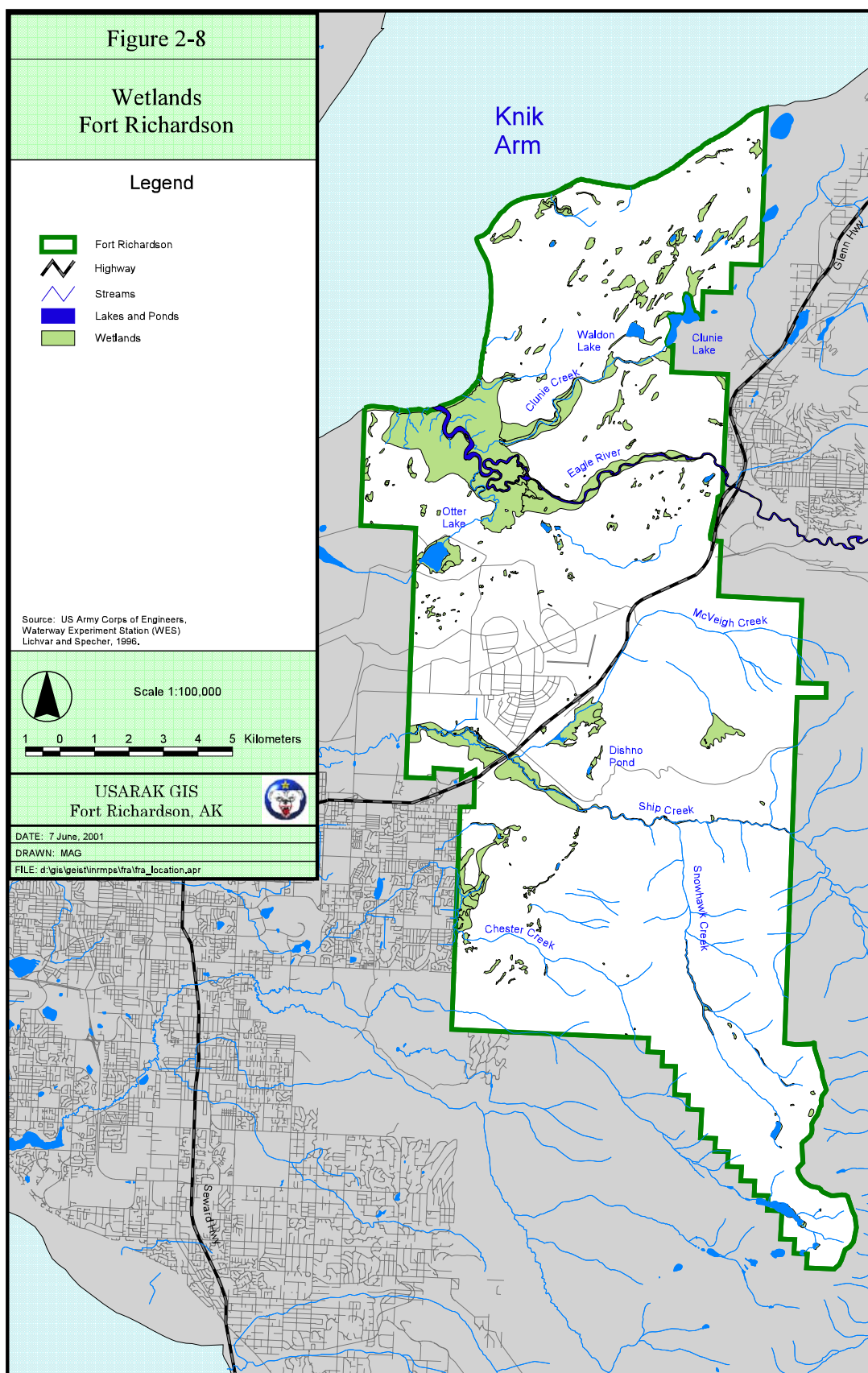


Figure 2-9a. Fort Richardson Wildlife Habitat.

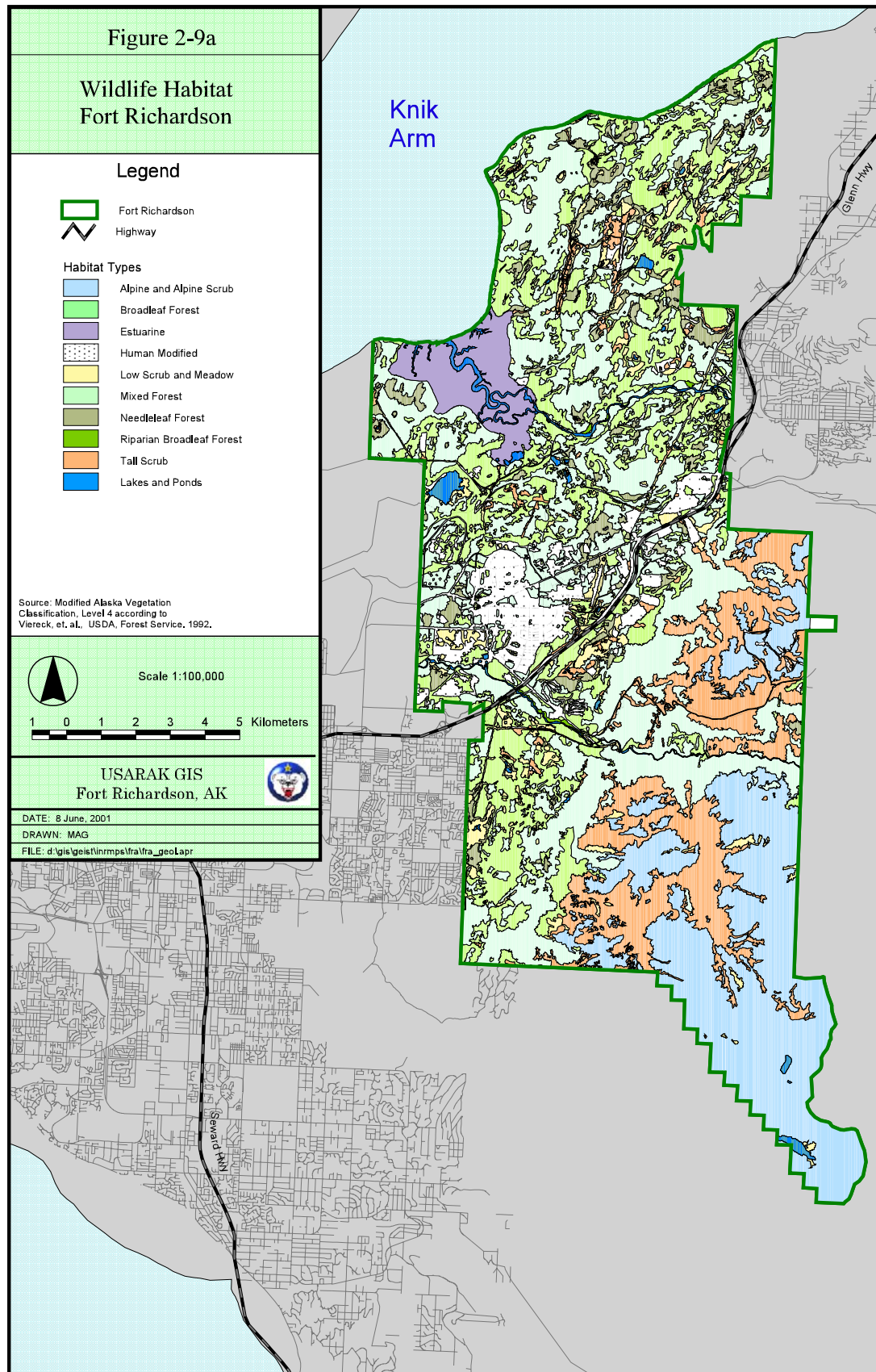
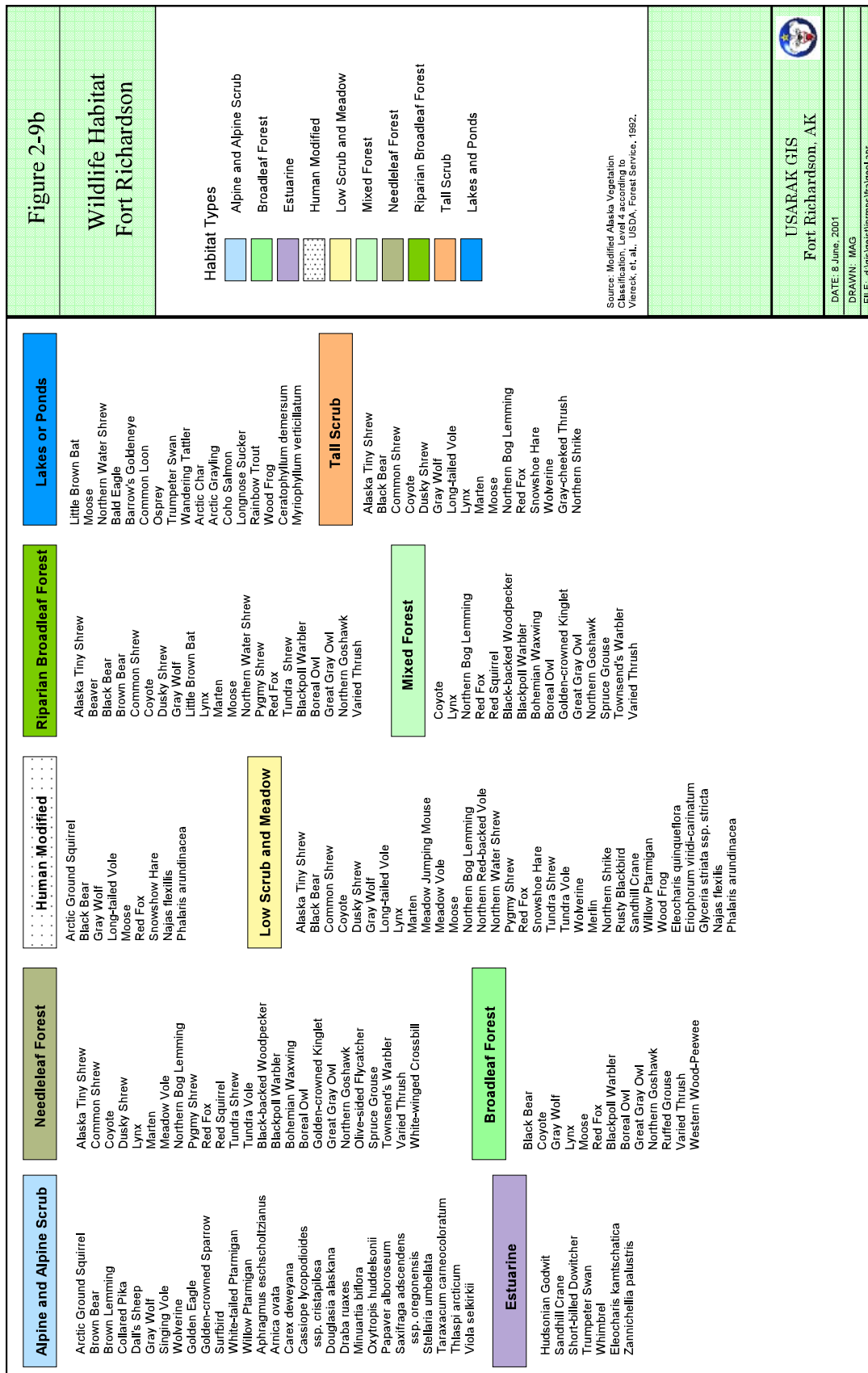


Figure 2-9b. Fort Richardson Wildlife Habitat.







*Fort Richardson bull moose.*



*Brown bear.*



*Fort Richardson has a high percentage of bull moose.*



*Black bear cubs.*

species among hunters and wildlife viewers (Gosweiler 1984; Bennett 1982). Managing for moose will also benefit a variety of other wildlife species that share the same environmental conditions and variables.

A survey of the Fort Richardson moose herd is conducted annually using fixed-wing aircraft. This survey is usually flown in November by the ADF&G and DPW Environmental Resources Department.

Over the past 20 years, the moose population that frequents Fort Richardson, Elmendorf AFB, and Ship Creek (hereinafter referred to as the Fort Richardson moose herd) has remained relatively stable at a projected population of 525 to 650 animals (Quirk 1996). The nine-year average (1986-1994) calf:cow ratio was 39:100, and the bull:cow ratio was 48:100. The average number of bulls per

100 cows is substantially higher than normal due to the desire to maintain a greater number of bulls for urban viewing and photography. The average number of calves per 100 cows is at the high end of normal for moose herds throughout Alaska. Exceptionally high calf production occurred in 1986 and 1987 (58-60:100), with calf production in the 28-38:100 range during 1988-1994.

Although the Fort Richardson moose herd has been relatively stable over the years, there have been some sporadic declines during extreme winters with persistent and deep snow packs. Only one winter (1994-1995) with unusually heavy and persistent snowfall resulted in a large decrease in the moose population (26 percent). ADF&G believes that overbrowsing, associated with a herd above carrying capacity in the Anchorage area (including Fort Richardson), was the cause of the loss. Com-

Table 2-3. Annual Moose Population, 1986 - 1996.

Year	Total	Cows	Calves	Bulls	Bulls/ 100 Cows	Calves/ 100 Cows
1986	474	230	137	107	47	60
1987	398	173	100	125	72	58
1988	455	256	80	119	46	31
1989	476	264	97	115	44	37
1990	339	172	60	107	62	35
1991	490	282	105	103	36	37
1992	355	214	67	74	35	31
1993	456	256	78	122	48	38
1994	401	239	67	95	40	28
1996	294	157	48	89	56	31
Avg.	413.8	224.3	83.9	105.6	48.6	38.6

pounding the issue has been the steady and significant loss of moose habitat on Fort Richardson due to construction, drop zone enlargement, and land transfers. This loss of hundreds of acres has reduced the overall carrying capacity for moose. Heavy snows during the 1994-95 winter further exacerbated the situation.

During the past five years, annual hunter harvest of moose has averaged 40-45 animals per year. Table 2-3 shows results of moose survey data from 1986 through 1996.

The size of Fort Richardson's herd makes it the largest concentration of wintering moose in the Anchorage urban area. The long-term vitality of the herd is due, in part, to wildlife management practices by Fort Richardson and ADF&G since the



*Grey wolf.*

mid-1960s. Fort Richardson has had limited success in improving moose browse and clearing and rehabilitating areas for preferred plant species. Likewise, ADF&G has taken great

interest in promoting the population and improving recreational value of moose for the Anchorage area. USARAK and ADF&G manage moose cooperatively in accordance with a 1992 cooperative



*Dall sheep.*



*Coyote.*





*Canada lynx.*



*Red squirrel.*



*Red fox.*



*Wolverine.*



*Beaver.*



*Willow ptarmigan.*